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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,402	11/14/2001	Shigeru Sautome	Q67281	7038

7590 04/24/2007  
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC  
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Washington, DC 20037-3202

EXAMINER
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SETH, MANAV

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/24/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

09/987,402

**Applicant(s)**

SAOTOME ET AL.

**Examiner**

Manav Seth

**Art Unit**

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-13 and 15-41 is/are pending in the application.
- 4a) Of the above claim(s) 1-4,9-12 and 26-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5,7,8,13,15-25 and 29-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

1. The amendment received on February 12, 2007 has been entered in full.
2. Applicant's arguments with respect to rejected claims as presented in the amendment filed have been fully considered but are not persuasive. Therefore, the rejections made before still stand.

### *Claim Objections*

3. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim, which depends from a dependent claim, should not be separated by any claim, which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

Claim 20, which is a dependent claim, refers to a succeeding claim 25. Appropriate correction is required.

*Response to Arguments*

4. Applicant's arguments regarding the prior art rejections under Takeo on pages 10-13 of the Amendment filed on February 12, 2007 have been fully considered but are not persuasive.

5. On page 11 of the Amendment filed, Applicant argues in substance: "Although Takeo does disclose that when "the dose of x-rays irradiated to the IP is high and the image signal range is narrow, the EDR adjusts the read-out condition", the read-out conditions are not changed **according to** the photographic conditions under which an image of an object is taken" and further argues "Takeo, however, does not disclose or suggest adjusting the read-out conditions directly based on the dose of X-rays irradiated to the image panel".

The Examiner respectfully disagrees. First of all, examiner would like to define the term "according to" as used in the claim. The term "according to" in any popular dictionary means "in proportion to"/ "in agreement with"/ "in conformity with"/ "in accordance with". Applicant in 2<sup>nd</sup> paragraph of page 11 of the amendment filed agrees that "Takeo discloses setting the read-out conditions based on light emitted by an image panel (IP) on which an image has already been recorded", but however, Takeo also teaches that "the intensity of light emitted by the IP is in proportion to the dose of X-rays irradiated to the IP" (col. 10, lines 1-5). Therefore, (a) if the intensity of light emitted by the IP is in accordance with the dose of X-rays irradiated to the IP", and , (b) "if read-out conditions are in accordance with the light emitted by an image panel (IP)", then, (c) read-out conditions are in accordance with the with the dose of X-rays irradiated to the IP. Further adding, if there is no input then there is no output- meaning if there is no input change in the dose

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of X-rays, then the read-out conditions won't change, which clearly shows that read-out conditions are directly related to the input doses of the X-rays (photographic condition).

Applicant further argues on page 12 that "in Takeo, the detection level, which is set based on the image data, is not affected by the irradiation dose (photographing conditions). In contrast, in the present invention, "the detecting level of an abnormal shadow" is determined based on "the photographing conditions". Examiner here asserts that, in the claims the abnormal shadow is itself detected by reading an image, and under different photographic conditions images produced/generated will have different image characteristics and therefore, abnormal shadow read-out conditions (or detecting levels) would also change with different photographic conditions and the same is taught by Takeo - that images generated under different doses of X-ray would provide images with different characteristics and therefore the image read-out conditions (abnormal shadow detection levels) will change according to the doses of X-ray, therefore the abnormal shadow detection in an image is directly changed in accordance to the photographing conditions under which the image of the object is taken (See Takeo, col. 10, lines 35-47).

Regarding claim 34, in the previous office action examiner took official notice of the subject matter recited in claims 34 stating that "the degree of compression of an object used as photographic condition is very well known in the art of mammography and further provided the motivation to do so is that it would provide more accurate results in terms of abnormal shadow detection as individual differences in breast structure of patients could be taken account. Applicant in the arguments challenged the official notice and further asked for the prior art that uses this degree of compression of an object used in abnormal shadow detection. Lasky, U.S. Patent No. 3,578,971 in col. 3, lines 45-48 provides the teachings of the same.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 5, 7, 8, 13, 15-25, 29-33 and 35-41 are rejected under 35 U.S.C. 102(b) as being unpatentable over Takeo et al., U.S. Patent No. 5,714,764.

**Regarding claim 5,** Takeo discloses a method of detecting a prospective abnormal shadow in an image of an object at a predetermined detection level (col. 12, lines 10-16), the method comprising changing the detecting level according to photographing conditions under which the image of the object is taken (col. 13, lines 25-56; col. 10, lines 35-46- changing the detection levels according to the photographing conditions such as HI and LOW dose of radiation from radiation source); wherein the photographing conditions is at least one of the (a) tube voltage or the tube current of the radiation source, (b) the irradiating time; (c) the product of the tube current and the irradiating time; (d) the degree of compression of the object when the object is photographed under pressure; (e) whether a grid is used; (f) the kind of grid used; and (g) the magnifying power (col. 10, lines 35-46- the photographing conditions such as HI and LOW dose of radiation from radiation source and such variations of the radiations are apparently the functions of tube voltage or the tube current of the radiation source).

**Regarding claim 7**, Takeo discloses the detecting level is changed part by part of the image (col. 13, lines 38-45).

**Regarding claim 8**, Takeo discloses the image of the object is a mammogram (figure 1).

**Regarding claim 31**, claim 31 has been similarly analyzed and rejected as per claim 5.

**Regarding claim 36**, Takeo discloses wherein the image of the object comprises a plurality of parts and the detecting level is at one level at one of the plurality of parts and the detecting level is changed to another level for another of the plurality of parts (col. 15, lines 15-55 - flat portion and slant portion; col. 13, lines 38-45).

**Regarding claim 13**, Takeo discloses a system for carrying out the method of detecting a prospective abnormal shadow in a radiation image, said system comprising a prospective abnormal shadow detecting means which detects a prospective abnormal shadow at a predetermined detecting level (Abstract; col. 12, lines 10-16),

a photographic condition input means for inputting photographing conditions under which the image of the object is taken, the photographic conditions is at least one of the (a) tube voltage or the tube current of the radiation source, (b) the irradiating time; (c) the product of the tube current and the irradiating time; (d) the degree of compression of the object when the object is photographed under pressure; (e) whether a grid is used; (f) the kind of grid used; and (g) the magnifying power (col. 10, lines 35-46- the photographing conditions such as HI and LOW dose of radiation from radiation source and such variations of the radiations are

apparently the functions of tube voltage or the tube current of the radiation source and apparently in order to set these radiations from HI to LOW or vice-versa an input means is inherently required),

a detecting level changing means which changes the detecting level according to the photographing conditions input means, wherein the prospective abnormal shadow detecting means detects a prospective abnormal shadow according to the detecting level changed by the detecting level changing means (col. 13, lines 25-56; col. 10, lines 35-46).

**Regarding claim 15**, Takeo discloses the detecting level changing means which changes the detecting level part by part and the prospective abnormal shadow detecting means detects a prospective abnormal shadow according to the detecting level changed by the detecting level changing means part by part (col. 15, lines 15-55 - flat portion and slant portion; col. 13, lines 38-45).

**Regarding claim 16**, claim 16 has been similarly analyzed and rejected as per claim 8.

**Regarding claim 29**, Takeo discloses a system wherein the detecting level is changed by changing a value in an iris filter processing or by changing elements in a morphology operation (col. 8, lines 24-68; col. 12, lines 10-15; col. 15; lines 1-68; col. 16, lines 1-55).

**Regarding claim 30**, Takeo discloses a system wherein the detecting level is changed by changing a threshold level in an iris filter processing or by changing elements in a morphology operation (col. 8, lines 24-68; col. 12, lines 10-15; col. 15; lines 1-68; col. 16, lines 1-55).



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**Regarding claim 32**, claim 32 has been similarly analyzed and rejected as per claims 5 and 13.

**Regarding claim 37**, claim 37 has been similarly analyzed and rejected as per claim 37.

**Regarding claim 17**, claim 17 has been similarly analyzed and rejected as per claim 13.

**Regarding claims 18 and 19**, the citations of Takeo's disclosure in the rejection of claims 5 and 13 applies to the claims 18 and 19 where the processing condition is a threshold value employed in the detection processing. All other limitation have been similarly analyzed and rejected as per claims 5 and 13.

**Regarding claims 21**, claim 21 has been similarly analyzed and rejected as per claims 17 and 18 and Takeo further discloses image conversion processing (col. 10, lines 13-18).

**Regarding claim 22**, Takeo discloses the image conversion processing being frequency enhancement processing (col. 10, lines 13-18).

**Regarding claim 23**, claim 23 has been similarly analyzed and rejected as per claims 5, 13 and 17.

**Regarding claims 24 and 25**, Takeo discloses the radiation image is mammogram and the prospective abnormal shadow is a prospective micro calcification shadow (figure 1; col. 14, lines 41-67 – small calcified pattern).

**Regarding claim 20**, Takeo discloses an apparatus in which the detection processing condition is a filtering property of a shape dependent filter employed in the detection processing (figure 6; col. 8, lines 24-68; col. 12, lines 10-15; col. 15; lines 1-68; col. 16, lines 1-55).

**Claims 33 and 35** have been similarly analyzed and rejected as per claims 5, 13 and 17.

**Claim 38** has been similarly analyzed and rejected as per claim 37.

**Regarding claim 39**, Takeo teaches that images generated under different doses of X-ray would provide images with different characteristics and therefore the image read-out conditions (abnormal shadow detection levels) will change according to the doses of X-ray, therefore the abnormal shadow detection in an image is directly changed in accordance to the photographing conditions under which the image of the object is taken (See Takeo, col. 10, lines 35-47).

Regarding claims 40 and 41, these claims recite “receiving the photographic conditions from a device used in photographing prior to changing the detecting level”. Takeo as discussed before teaches that images generated under different doses of X-ray would provide images with different characteristics and therefore the image read-out conditions (abnormal shadow detection levels) will change according to the doses of X-ray, therefore the abnormal shadow detection in an image is

directly changed in accordance to the photographing conditions under which the image of the object is taken (See Takeo, col. 10, lines 35-47). Therefore, in order to change the detection levels, the dose of x-rays need to be changed.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeo et al., U.S. Patent No. 5,714,764.

**Regarding claim 34**, examiner takes official notice that the degree of compression of an object is a photographing condition that is well known in the art. It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to use the photographic condition of breast compression, as it is well known in the art of mammography. Doing so would enable the test to be more accurate, as individual differences in breast structure of patients could be taken into account, thus providing motivation.

*Conclusion*

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manav Seth whose telephone number is (571) 272-7456. The examiner can normally be reached on Monday to Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
BHAVESH M. MEHTA  
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Manav Seth  
Art Unit 2624  
April 18, 2007